

CLAIMS

1. A mechanical and adhesive fastener for joining parts at an interface comprising a connecting member having a head portion and a depending shank portion with a terminal end disposed about a centralized axis, said head and shank portions having a bore therein defined by an inner wall centered about said axis and an internal bottom surface in said shank portion, said bore extending from said bottom surface through said head portion, said inner wall having an internal helical thread winding about said axis, said shank portion having an external thread thereon for the threaded connection with at least one of the parts being joined, a driving member having a driving head and a threaded shank, said threaded shank being threadedly connected with said internal helical thread of said shank portion of said connecting member and advanced therein to a point spaced from said bottom surface of said bore to thereby define a variable volume cavity in said shank portion, an adhesive disposed in said cavity, adhesive conducting passages leading from said cavity to the exterior of the shank portion of said connecting member, a torque transmitting intermediate sleeve operatively mounted between the head of said driving member and the head portion of said connecting member for transmitting predetermined torque loads for driving said connecting member into at least one of said parts to thereby mechanically connect said parts together and then for collapsing to provide an adhesive seal between said head portion and said head to allow said shank to enter said cavity to a position therein to thereby force said adhesive into said interface of said parts to adhesively connect said parts.

2. A mechanical and adhesive self-drilling and self-tapping threaded fastener for connecting parts at a common joint comprising an outer shell member having an upper head portion and a depending shank portion, said head and shank portions being hollow to define an inner axially-extending cavity terminating in a bottom surface in said shank portion, an internal helical thread within said shank portion winding about said inner cavity, said shank portion extending from integration with said head portion to a terminal end portion, said terminal end portion being formed with forward cutting edges to constitute a drilling bit, said shank portion further having an external helical thread leading from said drilling bit to said head portion, a driving member having an upper head and a shank operative to be threaded into the hollow shank portion said outer shell member to a point spaced from said bottom surface of said cavity, an adhesive disposed in said cavity, a generally cylindrical collar operatively mounted between said head and said head portion respectively of said shell member and said driving member operative to transmit torque imparted to said driving member to said outer shell member initially to drivingly join said parts for rotation together and subsequently to compress and allow the continued application of torque to said driving member so that it advances into said cavity and displaces said adhesive therein to thereby force quantities of said adhesive into said common joint between the parts being connected.

3. The fastener unit of claim 2 wherein said external helical thread of said shank portion is self tapping and is operable to tap threads into said parts being connected and wherein said shank portion has adhesive conduction passages formed therein for transmitting adhesive from said cavity to said common joint of the connected workpieces.

4. A threaded mechanical and adhesive fastener for securing discrete parts overlaid at a common interface comprising a connection screw, a driving screw and an intermediate torque transmitting sleeve operatively mounted between said connection and driving screws, said connection screw having an upper head portion and an elongated shank portion depending therefrom and disposed about a central axis, said head and shank portion having an elongated bore therein extending about said axis and from an entrance in said head portion to a bottom surface in said shank portion, said shank portion being internally and externally threaded, adhesive conducting passages formed in said shank portion connecting said bore to the external thread of said shank portion, said driving screw having a driving head and a shank extending therefrom, said shank being externally threaded to threadedly engage the internal threads of said connection screw and to cooperate with said bore to define a variable volume adhesive chamber, an adhesive in said chamber, and a torque transmitting sleeve for limiting installation torque applied to said driving screw and to seal the drive screw relative to the connection screw and to effect the controlled pressure application of adhesive into said common interface.

5. The fastener of claim 4 wherein said shank of said connection screw has a drill formed as the leading end thereof for drilling a bore in said discrete parts and wherein said shank portion of said connecting screw has a self tapping thread spiraling externally therearound so that the connection screw can be rotatably driven to drill a mounting bore through said parts and subsequently tap a thread in said bore so that said threaded fastener threadedly connects said parts and said driving screw subsequently effects the grounding of said connection screw and advances into said

adhesive chamber to force said adhesive therefrom at high pressure into said interface to effect the adhesive bonding of said joint.

6. The fastener of claim 4 wherein said torque-transmitting sleeve is a generally cylindrical and collapsible member operatively disposed about said driving screw for transmitting torque to said connection screw while sealing said chamber to optimize the threaded and adhesive connection.

7. A threaded mechanical and adhesive fastener for securing discrete parts overlaid at a common interface comprising a connection screw, a driving screw and an intermediate torque transmitting sleeve operatively mounted between said connection and driving screws, said connection screw having an upper head portion and an elongated shank portion depending therefrom and disposed about a central axis, said head and shank portion having an elongated bore therein extending about said axis and from an entrance in said head portion to a bottom surface in said shank portion, said shank portion being internally and externally threaded, adhesive conducting passages radially formed only in an upper portion of said shank portion connecting said bore to the external thread of said shank portion, said driving screw having a driving head and a shank extending therefrom, said shank being externally threaded to threadedly engage the internal threads of said connection screw and to cooperate with said bore to define a variable volume adhesive chamber, said shank having at least one elongated adhesive conducting channel therein, an adhesive in said chamber, and a torque transmitting sleeve for limiting installation torque applied to said driving screw and to seal the drive screw relative to the connection screw and to

effect the controlled pressure application of adhesive through said adhesive conducting channel into said common interface.

8. The fastener of claim 7 wherein said shank of said connection screw has a drill formed as the leading end thereof for drilling a bore in said discrete parts and wherein said shank portion of said connecting screw has a self tapping thread spiraling externally therearound so that the connection screw can be rotatably driven to drill a mounting bore through said parts and subsequently tap a thread in said bore so that said threaded fastener threadedly connects said parts and said driving screw subsequently effects the grounding of said connection screw and advances into said adhesive chamber to force said adhesive therefrom at high pressure into said interface to effect the adhesive bonding of said joint.